

## COMUNICAZIONE 1

### LONG-TERM RESPONSES TO ENVIRONMENTAL VARIATIONS IN *POSIDONIA OCEANICA*

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In order to distinguish among natural variations and effects of climatic changes, the relationship between production and thermal regime has been studied using *P. oceanica* as a biomarker.

Plant production data, obtained through the lepidochronological method, has been evaluated for the period 1969-2004, in the Lacco Ameno meadow (Island of Ischia, Gulf of Naples). The long-term analysis was conducted in correspondence to the bathymetric level of maximum production of the system (10m), which was contemporaneously interested by a regression process.

A sinusoidal trend, characterized by the alternation of low and high production periods, was observed for the rhizome compartment; on the opposite, at shoot level, a stochastic pattern was evident. A significative increase in the plant production was evident after 1984.

The analysis of climatic variations in the same time interval confirmed the biological discontinuity; an increasing trend, with values always above the interannual average since 1985, was recorded for thermal regime and sky cover.

These results confirm the sensitivity of *P. oceanica* to environmental forcing, such as the recent Mediterranean warming, and of consequence, its role as biomarker. Furthermore, distinguishing between climate or anthropogenic causes is often difficult, also due to their combined effects. The appropriate time scale (25 years) has allowed to discriminate among them and to assess that the regression of this meadow seems to be structural and not functional.

The interplay between ecological factors (deterministic) and historical processes (stochastic) in determining *Posidonia* functional responses is discussed.